STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

CONTENTS

SHEET	DESCRIPTION
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4	PROFILE
5-8	BORE LOGS

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. <u>45347.1.17 (BD-5101P)</u> ___ F.A. PROJ. *BRZ-1145(7)* COUNTY **MARTIN** PROJECT DESCRIPTION BRIDGE NO. 60 ON SR 1145 (EVERETT CREEK ROAD) OVER COLLIE SWAMP AT -L- 12+95.44

STATE PROJECT REPERENCE NO. SHEET TOTAL SHEETS STATE N.C. BD-5101P

CAUTION NOTICE

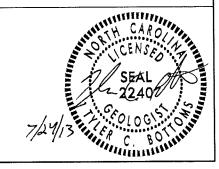
THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOLL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, CEOTECHNICAL ENGINEERING UNIT AT (919) TOT-6850. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSABRLY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORNINGS OR GETWEEN SAMPLED STRATA WITHIN THE BOKENOLE. THE LABORATORY SAMPLE DATA AND THE IN STU UNIPLACED TEST DATA CAN BE RELED ON ONLY TO THE DEGREE OF RELIABILITY INSERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOUL MOSTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION, THESE WATER LEVELS OR SOUL MOSITURE CONDITIONS MAY WARY CONSIDERABLY WITH THE ACCORDING TO CLUMATIC CONDITIONS MAY WARY CONSIDERABLY WITH THE ACCORDING TO CLUMATIC CONDITIONS MAY ANY CONSIDERABLY WITH THE ACCORDING TO CLUMATIC CONDITIONS MAY ANY CONSIDERABLY WITH THE ACCORDING TO CLUMATIC CONDITIONS MAY DESCRIBED.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLAMS ARE PRELIMBARY ONLY AND IM MARY CASES THE FIRML DESIGN DETAILS. ARE DIFFERENT, FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT, THE DEPARTMENT DOES NOT WARRARMIT OR LUSS PROJECTION OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT USBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THIS PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE BYFORMATION.

	C.M. WRIKE
	D.G. PINTER
	F&R PERSONNEL
	and the second s
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INVESTIGATED BY	T.C. BOTTOMS
CHECKED BY	D.N. ARGENBRIGHT
	D.N. ARGENBRIGHT
DATE	JULY 2013

PERSONNEL



5101

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

	SOIL AND RO	CK LEGEND, TERM	IS, SYMBOLS, A	AND ABBREVI	ATIONS	
SOIL DESCRIPTION	GRADATION				DESCRIPTION	TERMS AND DEFINITIONS
SDIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY TH	FROM FINE TO COARSE. E SAME SIZE.(ALSO			T IF TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO 1206, ASTM D-1586), SOIL	POORLY GRADED) GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR		SPT REFUSAL IS PENE	ETRATION BY A SPLIT SPOON	SAMPLER EQUAL TO OR LESS THAN &1 FOOT PER 60 BLOWS. ON BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONI	AQUIFER - A WATER BEARING FORMATION OR STRATA.
CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE:	ANGULARITY OF GRAINS	10NC 3/2E3,	OF WEATHERED ROCK.			ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SHIPD ON THAT CONTINUE
CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE	TERMS: ANGULAR,	1972	TYPICALLY DIVIDED AS FOLE		ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.
VERY STAFF, GRAY, SILTY CLAY, MOIST WITH INTERSEDUED FAKE SAKO LAYERS, HIGHLY PLASTAC, A-7-6	SUBANGULAR, SUBROUNDED, OR ROUNDED.		WEATHERED ROCK (WR)	NON-COASTAL PI BLOVS PER FOO	LAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 DT IF TESTED.	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL
SOIL LEGEND AND AASHTO CLASSIFICATION	MINERALOGICAL COMPOSITION		CRYSTALLINE		E GRAIN IGNEOUS AND METAMORPHIC ROCK THAT	AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS ORGANIC MATERIALS CLASS. (≤ 35% PASSING *200) (> 35% PASSING *200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.	USED IN DESCRIPTIONS	ROCK (CR)	WOULD YIELD SF GNEISS, GABBRO.	PT REFUSAL IF TESTED. ROCK TYPE INCLUDES ORANITE, SCHIST, ETC.	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
GROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5	COMPRESSIBILITY		NON-CRYSTALLINE -		GRAIN METAMORPHIC AND NON-COASTAL PLAIN DCK THAT WOULD YEILD SPT REFUSAL IF TESTED, ROCK TYPE	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
CLASS. A-1-a A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-5 A-3 A-6, A-7		LESS THAN 31	ROCK (NCR)	INCLUDES PHYLL	LITE, SLATE, SANDSTONE, ETC.	OF SLOPE.
SYMBOL 000000000000000000000000000000000000	MODERATELY COMPRESSIBLE LIOUID LIMIT HIGHLY COMPRESSIBLE LIOUID LIMIT	EQUAL TO 31-50 GREATER THAN 50	COASTAL PLAIN		SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
7 PASSING	PERCENTAGE OF MATERIA		(CP)	SHELL BEDS, ETC	C	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT
* 10 59 MX GRANULAR SILT MUCK,	ORGANIC MATERIAL GRANULAR SILT - CLAY	OTHER MATERIAL			ATHERING	ROCKS OR CUTS MASSIVE ROCK.
* 40 38 MX 50 MX 51 MX	SULS SULS	ACE 1 - 10%		SH, CRYSTALS BRIGHT, FEW JO F CRYSTALLINE.	DINTS MAY SHOW SLIGHT STAINING ROCK RINGS UNDER	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
L100/10 L1M3T 48 MX 41 MN 46 MX 41 MN 46 MX 41 MN 48 MX 41 MN 50 H 5 WITH	LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LI	TTLE 10 - 20%			VED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN,	DIP_DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF
PLASTIC INDEX 6 MX NP 18 MX 10		ME 20 - 35% GHLY 35% AND ABOVE	(V SLI.) CRYSTALS	ON A BROKEN SPECIMEN FAC	CE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF	THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
GROUP INDEX 8 8 6 4 MX 8 MX 12 MX 16 MX NO MX MODERATE DRGANI	GROUND WATER			STALLINE NATURE.	NED AND DISCOLORATION EXTENDS INTO ROCK UP TO	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE
USUAL TYPES STONE FRACS FINE SILTY OR CLAYEY SILTY CLAYEY ORGANIC SOILS		DRILLING	(SLI.) 1 INCH. OP	PEN JOINTS MAY CONTAIN CL	AY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
OF MAJOR GRAVEL, AND SAND GRAVEL AND SAND SOILS SOILS MATTER	STATIC WATER LEVEL AFTER 24 HOURS				. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
GEN. RATING	VPW DEDCHED WATER CATURATER TONE OR WATER READ	ING CIDATA			DISCOLORATION AND WEATHERING EFFECTS, IN RE DULL AND DISCOLORED, SOME SHOW CLAY, ROCK HAS	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.
AS A EXCELLENT TO GOOD FAIR TO POOR POOR POOR UNSUITAR	E CHOICE MITCH STITUTE COND, SIX MITCH SELIN	ING STORIN		IND UNDER HAMMER BLOWS AN	ND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY
PI OF A-7-5 SUBGROUP IS ≤ LL - 30; PI OF A-7-6 SUBGROUP IS > LL - 30	SPRING OR SEEP				D OR STAINED. IN GRANITDID ROCKS, ALL FELDSPARS DULL	THE STREAM.
CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	S	SEVERE AND DISCO		DW KADLINIZATION, ROCK SHOWS SEVERE LOSS OF STRENGTH OGIST'S PICK, ROCK GIVES 'CLUNK' SOUND WHEN STRUCK.	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.
PRIMARY SOIL TYPE COMPACTNESS OR PENETRATION RESISTENCE COMPRESSIVE STRENGTH	ROADWAY EMBANKMENT (RE) SPT DAT TEST BORI	NG TEST BORING		D, WOULD YIELD SPT REFUSAL		JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
CONSISTENCY (N-VALUE) (TONS/FT?)	H WITH SOIL DESCRIPTION	<u>T</u>	00.00		D OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO
GENERALLY VERY LOOSE 4 CRANILLAR LOOSE 4 TO 10	SOIL SYMBOL AUGER BORING	SPT N-VALUE	EXTENT, S	SOME FRAGMENTS OF STRONG		ITS LATERAL EXTENT.
MATERIAL MEDIUM DENSE 10 TO 30 N/A	ARTIFICIAL FILL (AF) OTHER - CORE BORING	REF SPT REFUSAL		D, YIELDS SPT N YALUES > 1		LENS - A BODY OF SDIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN
(NON-COHESIVE) DENSE 30 10 50	THAN ROADWAY EMBANKMENT		VERY SEVERE ALL ROCK (V SEV.) THE MASS	EXCEPT QUARTZ DISCOLOREI	D OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK	SDILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
VERY SDFT <2 <0.25	INFERRED SOIL BOUNDARY MONITORING WE	:LL	REMAINING.	G. SAPROLITE IS AN EXAMPLE	OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.
GENERALLY SOFT 2 TO 4 0.25 TO 0.50 SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0	INFERRED ROCK LINE A PIEZOMETER INSTALLATION		1		BRIC REMAIN. IF TESTED, YIELDS SPT N VALUES < 100 BPF	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
MATERIAL STIFF 8 TO 15 1 TO 2	***** ALLUVIAL SDIL BOUNDARY SLOPE INDICAT	OR			NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND MAY BE PRESENT AS DIKES OR STRINGERS, SAPROLITE IS	ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4 HARD >30 >4	25/825 DIP & DIP DIRECTION OF		ALSO AN E			ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND
TEXTURE OR GRAIN SIZE	ROCK STRUCTURES (A) CONE PENETRO	METER TEST			HARDNESS	EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE
U.S. STD. SIEVE SIZE 4 10 40 60 200 270	● SOUNDING ROD			BE SCRATCHED BY KNIFE OR HARD BLOWS OF THE GEOLO	SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES	PARENT ROCK.
DPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	ABBREVIATIONS	Control of the Contro	1		CK ONLY WITH DIFFICULTY, HARD HAMMER BLOWS REQUIRED	SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL
BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	AR - AUGER REFUSAL MED MEDIUM	VST - VANE SHEAR TEST		ACH HAND SPECIMEN.		TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
(BLDR.) (COB.) (GR.) (CSE. SD.) (F SD.) (SL.) (CL.)	BT - BORING TERMINATED MICA MICACEOUS	WEA WEATHERED			CK, GOUGES OR GRODVES TO 0.25 INCHES DEEP CAN BE DLOGIST'S PICK, HAND SPECIMENS CAN BE DETACHED	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR
GRAIN MM 305 75 2.0 0.25 0.05 0.005	CL CLAY MOD MODERATELY CPT - CONE PENETRATION TEST NP - NON PLASTIC	γ - UNIT WEIGHT γ - DRY UNIT WEIGHT	BY MODER	ERATE BLOWS.		SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (GPT) - NUMBER OF BLOWS (N OR BPF) OF
SIZE IN. 12 3	CSE CDARSE ORG ORGANIC				NCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE	A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH
SOIL MOISTURE - CORRELATION OF TERMS	DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC	SAMPLE ABBREVIATIONS S - BULK		OF A GEOLOGIST'S PICK.	TO TELEGIST MONTHINING SIZE OF THIS SECTION OF THE	A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
SOIL MOISTURE SCALE FIELD MOISTURE GUIDE FOR FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION	6 - VOID RATIO SD SAND, SANDY F - FINE SL SILT, SILTY	SS - SPLIT SPOON ST - SHELBY TUBE			BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS SIZE BY MODERATE BLOWS OF A PICK POINT, SMALL, THIN	STRATA CORE RECOVERY ISREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY	FOSS FOSSILIFEROUS SLI SLIGHTLY	RS - ROCK	PIECES C	CAN BE BROKEN BY FINGER F		OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY
(SAT.) FROM BELOW THE GROUND WATER TABLE	FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL FRAGS FRAGMENTS W - MOISTURE CONTENT	RT - RECOMPACTED TRIAXIAL CBR - CALIFORNIA BEARING	TEIT OM DE C		EXCAYATED READILY WITH POINT OF PICK. PIECES 1 INCH KEN BY FINGER PRESSURE, CAN BE SCRATCHED READILY BY	TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE
PLASTIC LIQUID LIMIT	H1 HIGHLY V - VERY	RATIO	FINGERNA		NEW BY FINGER FRESSURE, CHN DE SCHRICHED REHDIET DI	TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
RANGE CPI) - WET - (W) SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE	EQUIPMENT USED ON SUBJECT	PROJECT	FRACTURE	RE SPACING	BEDDING	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
PL PLASTIC LIMIT	DRILL UNITS: ADVANCING TOOLS:	HAMMER TYPE:	TERM	SPACING	TERM THICKNESS VERY THICKLY BEDDED > 4 FEET	BENCH MARK: BMIO: RR SPIKE IN 30' WHITE OAK AT -L- STA. 12+21, 50' RT
OM OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTUR		X AUTOMATIC MANUAL	VERY WIDE WIDE	MORE THAN 10 FEET 3 TO 10 FEET	THICKLY BEDDED 1.5 - 4 FEET	N=748606 E=2531222 ELEVATION: 37.42 FT.
SL SHRINKAGE LIMIT	MOBILE B- CLAY BITS G. CONTINUOUS FLIGHT AUGER		MODERATELY CLOSE CLOSE		THINLY BEDDED 0.16 - 1.5 FEET VERY THINLY BEDDED 0.03 - 0.16 FEET	
- DRY - (D) REQUIRES ADDITIONAL WATER TO - DRY - (D) ATTAIN OPTIMUM MOISTURE		CORE SIZE:	VERY CLOSE	LESS THAN 0.16 FEET	THICKLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET	NOTES:
	O HOLLOW HODERS	B		INI	DURATION	_
PLASTICITY NACTORY INDEX (D)	CME-45C HARD FACED FINGER BITS		FOR SEDIMENTARY ROCKS		NING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	
PLASTICITY INDEX (PI) DRY STRENGTH NONPLASTIC 0-5 VERY LOW	TUNGCARBIDE INSERTS		FRIABLE		G WITH FINGER FREES NUMEROUS GRAINS;	
LOW PLASTICITY 6-15 SLIGHT	CASING W/ ADVANCER	HAND TOOLS:	FRINDLE		BLOW BY HAMMER DISINTEGRATES SAMPLE.	
MED.PLASTICITY 16-25 MEDIUM HIGH PLASTICITY 26 DR MDRE HIGH	PORTABLE HOJST X TRICONE 2 15/16 STEEL TEETH	POST HOLE DIGGER	MODERATELY I		CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; EASILY WHEN HIT WITH HAMMER.	
COLOR	TRICONE TUNG,-CARB.	HAND AUGER			ARE DIFFICULT TO SEPARATE WITH STEEL PROBE;	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).	CORE BIT	SOUNDING ROD	INDURATED		ULT TO BREAK WITH HAMMER.	
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.		VANE SHEAR TEST	EXTREMELY IN		HAMMER BLOWS REQUIRED TO BREAK SAMPLE;	
				SAMPLE	E BREAKS ACROSS GRAINS.	

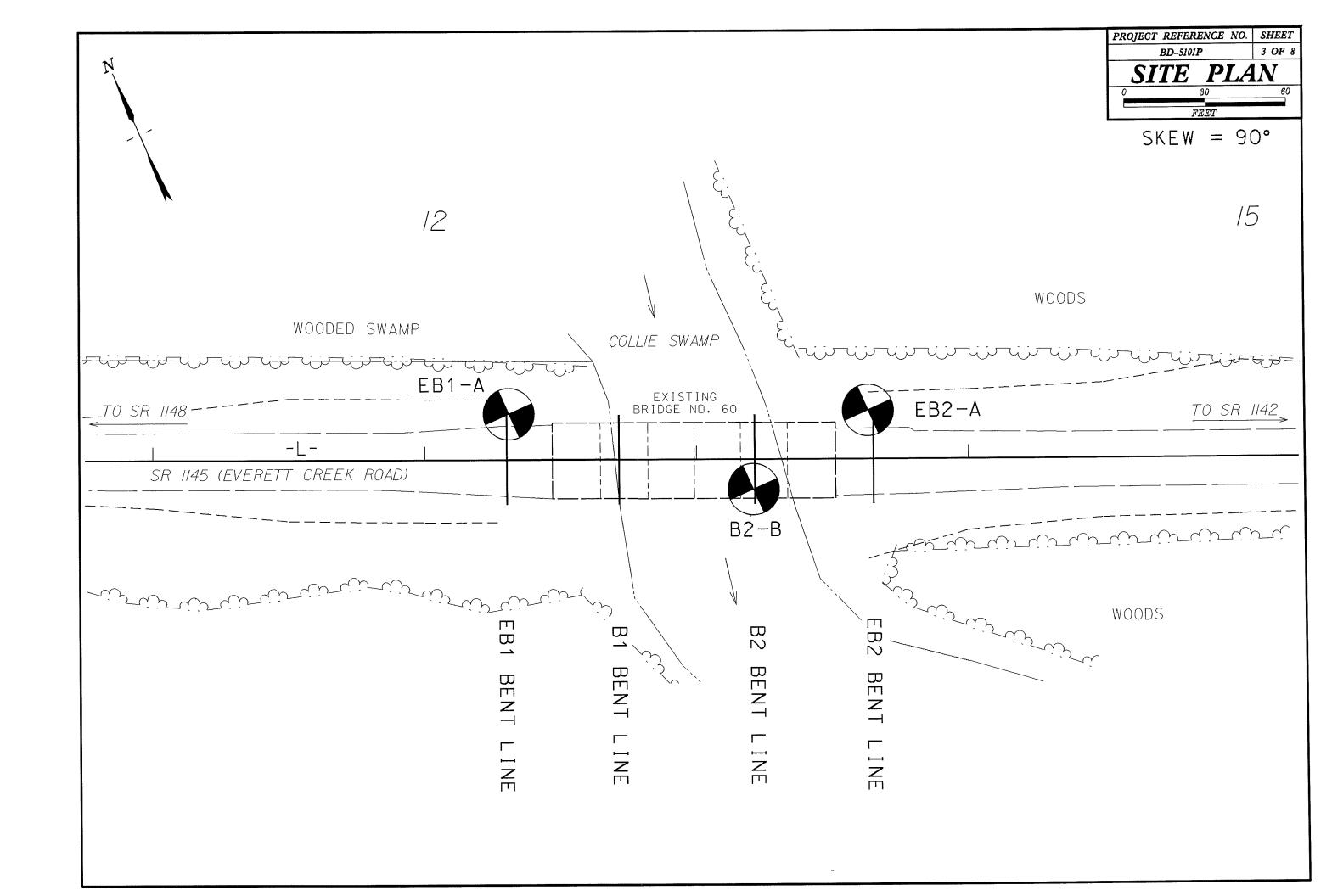
REVISED 09/23/09

PROJECT REFERENCE NO.

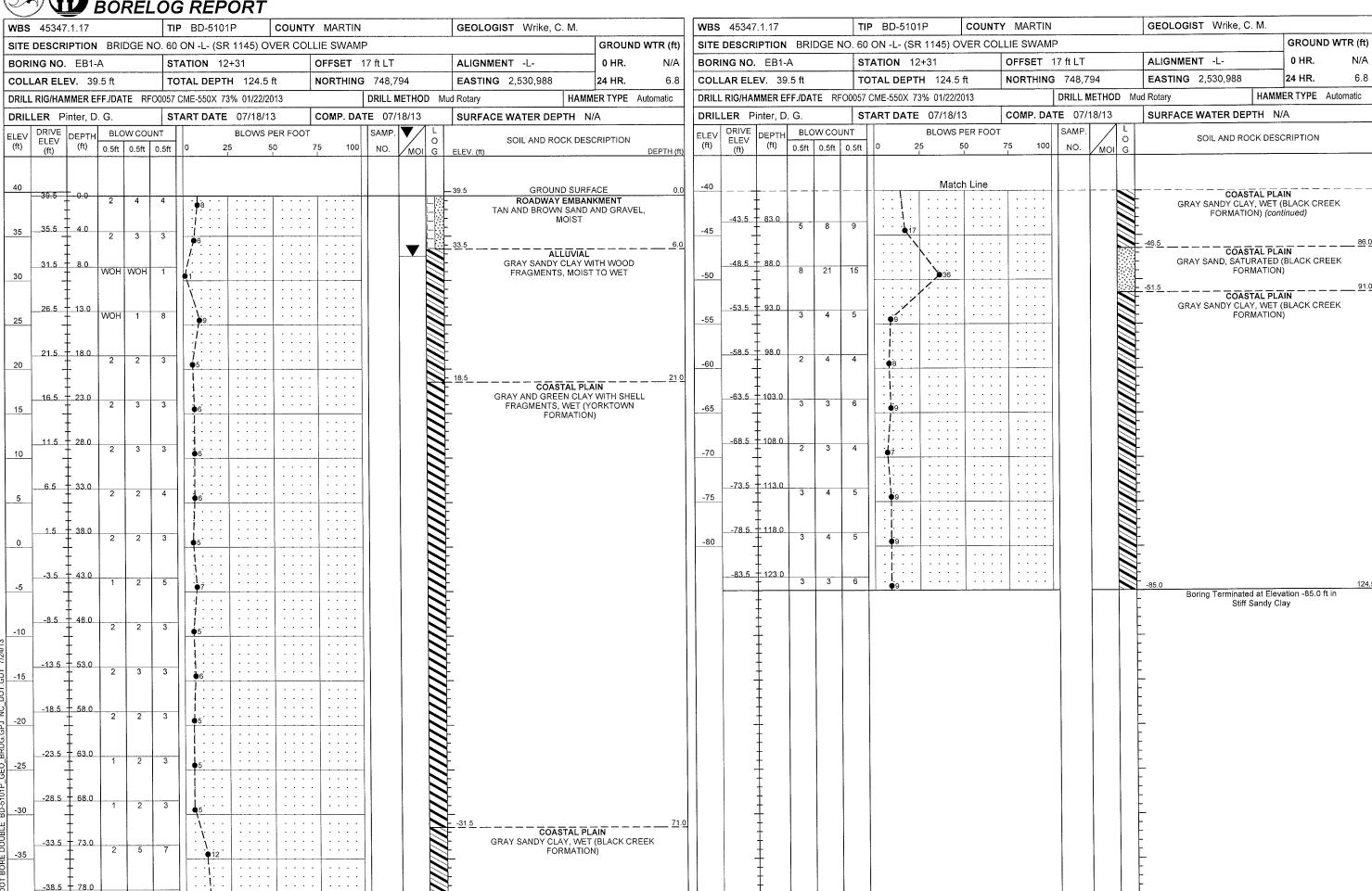
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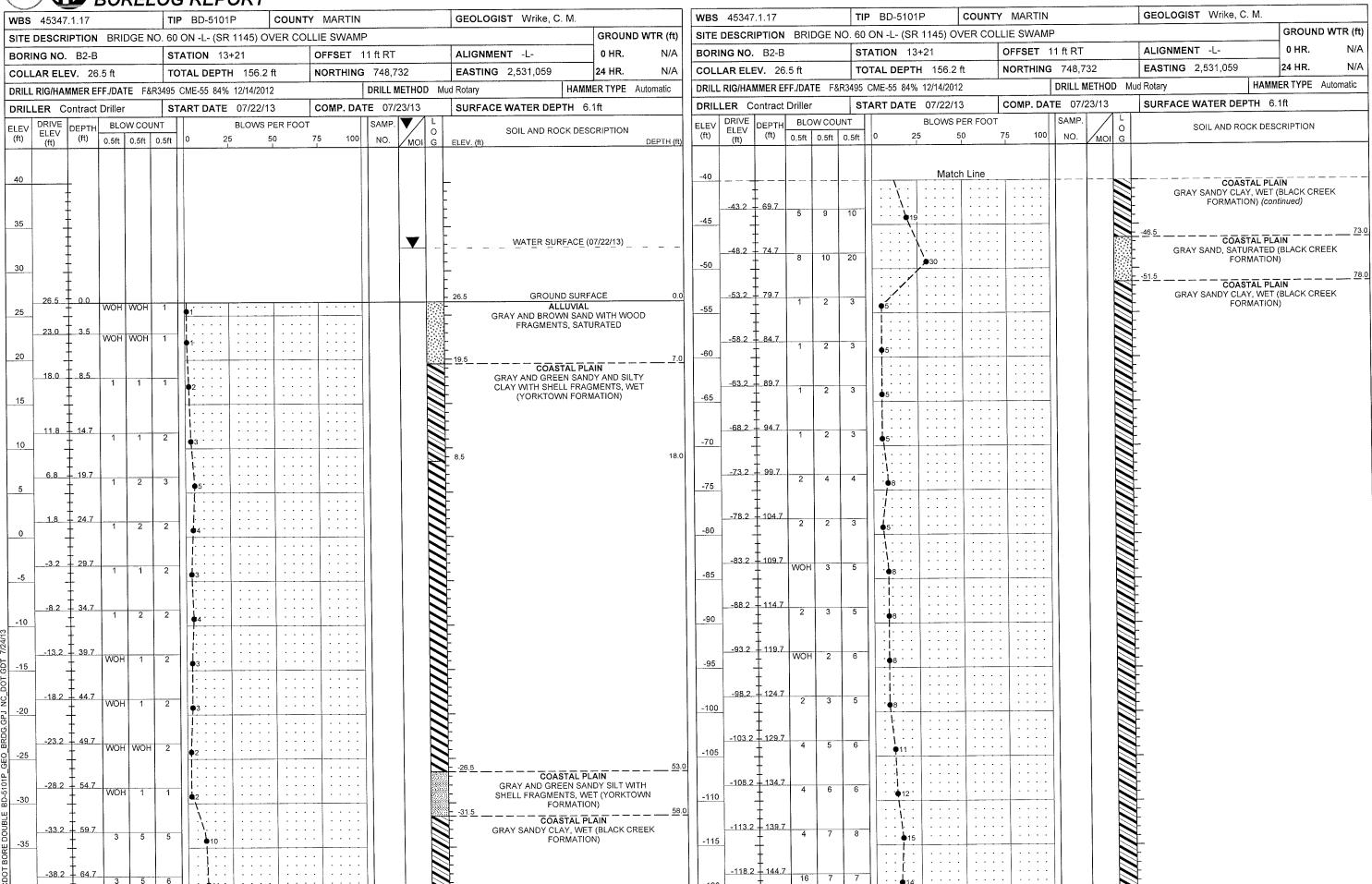
SHEET NO.

2 OF 8



70						BD-5101P 4 ROADWAY DESIGN HYDRAL	SHEET NO. 4 OF 8 AULICS GINEER
60	PROFILE	THROUGH	BORINGS	PROJECTED) ALONG -L	INCOMPLETE PLA DO NOT USE FOR NO ACQUISIT PRELIMINARY PLA	ANS SITION
50		EBI-A 12+31		B2-B EB2-A		DO NOT USE FOL CONSTRUCTS	rion
40		17' LT		II' RT I8' LT		VE + 2.0	40
	LOOSE TAN AND MOIST (RC	BROWN SAND AND GRAVEL.	WATER SURFACE		LOOSE TAN AND BROWN SAND, MOIST (ROADWAY EMBANKMENT)		_
30	VERY SOFT TO STIFF GRAY SANDY	CLAY WITH WOOD FRAGMENTS.	WET (ALLUVIAL)	@	SOFT BROWN MODERATELY ORGANIC SLLT WI FRAGMENTS, MOIST TO WET CALLUVIA OOSE TAN, GRAY AND BROWN SAND WITH WOOD SATURATED (ALLUVIAL)		30
20		\$	VER	LUOSE TO LOCK			20
JO .		©		① ① ① ② ② ② ② ② ② ③ ③ ③ ③ ③ ③ ③ ③ ③ ③			IC
0		®					C
	SOFT TO MEDIUM STIFF	GRAY AND GREEN SANDY SILT	AND SANDY AND SILTY CLAY WIT		WET (YORKTOWN FORMATION)		-1
-10		(S-1)		(a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c			
-20		§					
-30		<u>\$</u>		②—————————————————————————————————————			
-40	St	IFF TO VERY STIFF GRAY	SANDY CLAY, WET	©—————————————————————————————————————	(BLACK CREEK FORMATION)		
		0		®			
-50		DENSE TO VERY DENSE 3	GRAY SAND. SATURATED	©	(BLACK CREEK FORMATION)		
-60				<u> </u>			
-70		MEDIUM STIFF	TO VERY STIFF GRAY SANDY CLAY,	S WET (BLACK CREEK	(FORMATION)		
-80		®— —		®—————————————————————————————————————			
1		9		®— !!!!			1
-90				®—————————————————————————————————————			
-100				®—————————————————————————————————————			<u></u> -
-110				®-111	NC	TE: GROUNDLINE PROFILE ALONG LL- TAKEN	
-I20				(S)	i i i i i i	TE: GROUNDLINE PROFILE ALONG -L- TAKEN FROM BRIDGE SURVEY AND HYDRAULIC DESIGN REPORT DATED 03/25/13.	
		VERY S' DEN VE	TIFF GRAY CLAY WITH SAND LAYERS, SE GRAY SAND WITH LIGNITE. SATURA RY STIFF GRAY CLAY WITH SAND LAYE	WET GLACK CREEK FORMATION TED 36 GET GBLACK CREEK FORMATION RS. WET GLACK CREEK FORM	ACTION)	TE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO PROFILE.	: : :
-130	11+00	12+00	134	+00	14+00	15+00	





SITE	DESCRI	PTION	BRI	DGE I	10.60	ON -L- (SF	R 1145) OV	/ER COL	LIE SWAM	Р					GROUND	WTR (ft
OR	ING NO.	B2-B	1		ST	TATION 13	3+21		OFFSET	11 ft RT			ALIGNMENT -L-		0 HR.	N/A
OLI	LAR ELE	V . 26	6.5 ft		TC	OTAL DEPT	H 156.2 f	t	NORTHING	748,7	32		EASTING 2,531,059		24 HR.	N/A
RILL	RIG/HAN	MER E	FF./DA	TE F8	R3495	CME-55 849	6 12/14/2012			DRILL N	METHOD) Mu	ud Rotary	HAMN	IER TYPE A	utomatic
RIL	LER C	ontract	Driller		ST	TART DATE	07/22/13	3	COMP. DA	TE 07/	23/13		SURFACE WATER DEP	TH 6.	1ft	
EV ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLC 0.5ft	0.5ft		0 2	BLOWS P		75 100	SAMP. NO.	MOI G	0	SOIL AND ROCK DESCRIPTION ELEV. (ft) DEPTH			
25	123.2 -	 - - 149.7 	23	8	12	118	Match				/ MOI		GRAY CLAY WITH 122.5 GRAY SAND WITH GRAY CLAY WITH GRAY CLAY WITH	LIGNITI	SATURATE LAYERS, WE tion -129.7 ft i	147 149 D 150

